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10/800,281	03/12/2004	Thomas S. Neal	200314054-1	1299
22879 7590 05/07/2009 HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400				
EXAMINER MA, CALVIN				
ART UNIT 2629		PAPER NUMBER		
NOTIFICATION DATE 05/07/2009		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/800,281

Applicant(s)

NEAL ET AL.

Examiner

CALVIN C. MA

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 6-15, 19-20 and 24-26 are rejected under 35 U.S.C. 103(a), as being unpatentable over Wu (US Patent: 6,965,076) in view of Ma (US Patent: 5,615,081).

As to claim 1, Wu discloses a keyboard enclosure comprising:

a first cavity (i.e. the cavity that is formed by the entire volume area of the upper and lower enclosure) in which a circuit (i.e. the electrical circuit) can be disposed, the circuit include a first node and a second node both of which correspond to a key (i.e. in order to connect the key stroke two node is created on the circuitry membrane where a key press will activate the separate portion of the circuit), wherein the circuit is operable to generate a signal when the key causes the first and second nodes to contact each other (i.e. the key is pressed down by the user which bring the two node together and activate the signal for the character input specific to the key) (see Fig. 2C, Col. 6, Lines 7-9);

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a region forming a second cavity (i.e. the cavity that is formed only by lower enclosure which house the actual top holding cover, circuitry, and bottom holding cover) (see Fig. 2d, Col. 5, Lines 27-55);

and a node support (i.e. the electrical circuitry membrane that is located in the lower enclosure) located in the second cavity (i.e. the lower enclosure) and operable to support the second node of the circuit when the circuit is disposed in the first cavity (i.e. the top module which include rubber sheet and the switches over the sheet) (see Fig. 2d, Col. 5, Lines 27-55).

However Wu does not explicitly teach the second cavity in a lower enclosure for stiffening the lower enclosure and for providing a passage for one or more cables that electrically connect the keyboard to a processor. Ma teaches the second cavity in a lower enclosure for stiffening the lower enclosure and for providing a passage for one or more cables that couple the keyboard to a process (i.e. the two cavity in the laptop computer that support the keyboard which allow the cables to pass through, where the same design has the effect of strengthening the bottom of the keyboard layout by increasing mechanical support and making the keyboard structure more rigid also since the cable shown in figure 1 that extend from the two half of the keyboard units extend downward clearly into the two cavities 111 whereby it can be connected to the processor of the laptop computer therefore allowing the input to take place. In this way the cavities allow for the cable that electrically connecting the keyboard sections to the processor) (see Ma, Fig. 1, Col. 2, Lines 4-56).

Therefore it would have been obvious for one of ordinary skill in the art at the time the invention was made to have applied the additional bottom support cables pass through design of Ma into the keyboard design of Wu in order to adapt Wu's keyboard to a compact mobile computing application where the keyboard can be both compact and large in size when in deployment for more comfortable usage (see Ma, Col. 1, Lines 35-53).

As to claim 2, Wu teaches the enclosure of claim 1 wherein the enclosure includes one cavity (i.e. there is one overall cavity in the lower enclosure which contain the main QUERTY keys membrane) (see Fig. 2c and 2d, Col. 5, Lines 27-55, Col. 6, Lines 7-9).

As to claim 3, Wu teaches the enclosure of claim 1 wherein the second cavity has a substantial U-shape (i.e. the second cavity formed by the lower enclosure is a substantial u-shape) (see Fig. 2d, Col. 5, Lines 27-55).

As to claim 6, Wu teaches the enclosure of claim 1 wherein the enclosure includes thirteen node supports, each disposed in the second cavity (i.e. there are at least thirteen node one for each key since the QUERTY keyboard has at least 26 nodes support in the bottom cavity which support the 26 keys in the alphabet) (see Fig. 2d, Col. 5, Lines 27-55).

As to claim 7, Wu teaches the enclosure of claim 1 wherein the node support has a cylindrical shape (i.e. each of the node in the lower enclosure are off cylindrical shape) (see Fig. 3b).

As to claim 8, Wu teaches the enclosure of claim 7 wherein the node support is hollow (i.e. since the electrical contact on the membrane must have some space for connection and disconnect based on key press it must be hollow) (see Fig. 2d, Col. 5, Lines 27-55).

As to claim 9, Wu teaches the enclosure of claim 1 wherein the second cavity has a substantial U-shape and a bottom wall, and the node support extends from the bottom wall (i.e. since the figure 2d indicate that the metal plate is optional, this means that the electrical circuitry membrane could be the bottom layer touching the bottom wall and the node support in such case will extend from the bottom wall) (see Fig. 2d, Col. 5, Lines 27-55).

As to claim 10, Wu teaches the enclosure of claim 1 wherein the node support includes an end located at an entrance of the second cavity (i.e. since the electrical

circuitry faces upward and the key bumps are clearly at an entrance of the bottom cavity toward the top) (see Fig. 2d, Col. 5, Lines 27-55).

As to claim 11, Wu teaches the enclosure of claim 1 wherein the enclosure includes a floor (i.e. the bottom of the lower enclosure) and a rib (i.e. the separating pieces on the upper enclosure that create the different compartment key cluster) to maintain the position of the node support relative to the floor (i.e. the compartment arrangement of the rib contain the electrical circuitry thereby maintain the positions) (see Fig. 2d, 3b, Col. 5, Lines 27-55).

As to claim 12, Wu teaches the enclosure of claim 11 wherein the enclosure includes at least two ribs each operable to maintain the position of the node support relative to the floor (i.e. in fig. 3b it is clear that two ribs are used for the middle key clusters separation) (see Fig. 2d, 3b, Col. 5, Lines 27-55).

As to claim 13, Wu teaches the enclosure of claim 12 wherein the enclosure includes at least two node supports, and one of the ribs extends between two node supports (i.e. one of the rib separate the two node support lines of the function keys and the letter keys which naturally is extended between the two groups of nodes) (see Fig. 2d, 3b, Col. 5, Lines 27-55).

As to claim 14, Wu teaches the enclosure of claim 11 wherein: the cavity has a substantial U-shape, a bottom wall, and a sidewall, the node support extends from the bottom wall, and the enclosure includes at least two ribs that extend between the node support and at least one side wall (see Fig. 2d, 3b, Col. 5, Lines 27-55).

As to claim 15, Wu teaches a keyboard comprising:

a plurality of keys, each movable relative to the other keys (i.e. the keyboard is made up of movable keys) (see Fig. 2a);

a switch membrane assembly (i.e. PCB and electrical components membrane) including a plurality of circuits each having a first node and a second node both of which correspond to a respective one of the key (i.e. the keys activate the switches on the membrane when pressed that bring two electrical node into connection), wherein each circuit is operable to generate a signal when the key corresponding to the circuit's first and second nodes causes the first and second nodes to contact each other;

an upper enclosure (i.e. the upper enclosure) to hold the keys (see Fig. 2c); and a lower enclosure (i.e. the lower enclosure) to support the switch membrane assembly (see Fig. 2c). However, Wu does not explicitly teach the lower enclosure including: a region forming a cavity and operable to stiffen the lower enclosure, and a node support located in the cavity and operable to support one of more of the nodes of the switch membrane assembly.

Ma teaches the lower enclosure including: a region forming a cavity (105) (i.e. the region where the support socket is situated) and operable to stiffen the lower enclosure (104) (i.e. the existence of the oval structure stiffen the bottom enclosure 104 of the keyboard by spreading the forces), and a node support (107) (i.e. the individual pass through for cable pass through) located in the cavity and operable to support one of more of the nodes of the switch membrane assembly and for providing a passage for one or more cables that electrically connect the keyboard to a processor (i.e. keyboard is connected to the rest of the computer body where the cable is allowed to pass through) (see Ma, Fig. 1, Col. 2, Lines 5-54).

As to claim 19, see the discussion of claims 15 above, claim 19 differs only from claim 15 in the addition limitation of a computer system which is taught by Ma (see Fig. 1).

As to claim 20, see the discussion of claim 1 above, Wu teaches a method for supporting a switch membrane assembly of a keyboard (see Wu, Fig. 2a, 2c), Ganthier teaches forming a cavity (105) in a region of a lower enclosure of a keyboard to stiffen the lower enclosure (104); locating a node support (107) in the cavity to support a circuit node of the switch membrane assembly (see Ganthier, Fig. 1). Therefore, the combination of Wu and Ganthier meets the claim.

As to claim 24, see discussion of claim 1 above, Wu teaches a method for generating a signal (i.e. since the membrane circuitry creates an electronic connection that is then sent to the computer it generates a signal for the computer), the method comprising:

moving a key of a keyboard to move a top node (i.e. the cap portion of the key is set on actuating mechanism which is a rubber sheet and are the top node) of a switch membrane assembly toward a corresponding bottom node of the assembly wherein the top and bottom nodes are disposed in a first cavity of the keyboard (i.e. the electrical component membrane is the bottom node and in the cavity that enclose all of the space of the keyboard);

contacting the bottom node with the top node to generate a signal (the contact by the top node with the bottom node occurs as the key is pressed) (see Wu, Fig. 2a, 2b Col 5, Lines 15-53), when the top node contacts the bottom node wherein the node support is located in the second cavity of the keyboard (i.e. Wu teaches the lower cavity that contains the supporting structure for the key input systems) (see Wu, Fig. 2c).

Ma teaches physically supporting the bottom node (i.e. the electrical contact circuit) with a node support and for providing a passage for one or more cables that electrically connect the keyboard to a processor(i.e. the cable is directly connected to the bottom support. The two cavity in the laptop computer that support the keyboard which allow the cables to pass through, where the same design has the effect of strengthening the bottom of the keyboard layout by increasing mechanical support and making the keyboard structure more rigid also since the cable shown in figure 1 that

extend from the two half of the keyboard units extend downward clearly into the two cavities 111 whereby it can be connected to the processor of the laptop computer therefore allowing the input to take place. In this way the cavities allow for the cable that electrically connecting the keyboard sections to the processor) (see Ma, Fig. 1, Col.2, Lines 5-35). Therefore, the combination of Wu and Ma meets the claim.

As to claim 25, Wu teaches the method of claim 24 wherein moving the key of the keyboard includes pushing the key toward the top node (i.e. the rubber dome sheet having restorative forces that push the key toward the top node when it is pressed) (see Fig. 2a, Col. 3, Lines 1-20).

As to claim 26, Ma teaches a keyboard that is integrated into the computer which removes the extra metal support since the structure is already present in the laptop computer where the keyboard in this design combines with a computer body therefore also eliminates a need for keyboard metal plates, making it redundant in design. (see Ma, Fig. 1)

3. Claims 16, 18, 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu and Ma as applied to claims 1, 15 above, and further in view of Ganthier et al. (US Patent: 5,865,546).

As to claim 16, Wu and Ma do not explicitly teach lower enclosure of the keyboard having thirteen node supports. Ganthier teaches the keyboard of claim 15 wherein the lower enclosure includes thirteen node supports (i.e. since the sockets have a plurality of pin sockets more than two it has thirteen of the pin input supports), each operable to support a respective one of the nodes of the switch membrane assembly (i.e. the pins are the node from the switch assembly) (see Fig. 1, Col. 3, Lines 1-15, Col. 4, Lines 15-54).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have utilized the bottom socket connection design of Ganthier to the overall modular keyboard design of Wu and Ma in order to create an easier inter connection between input device for computer (see Ganthier, Col. 2, Lines 40-60).

As to claim 18, Ganthier teaches the keyboard of claim 15 wherein the lower enclosure includes a rib operable to maintain the position of the node support relative to the one or more nodes of the switch membrane assembly (i.e. since the rib is the filling material of the socket it extends between the individual nodes to help maintain the position of the pin socket so the pin will be inputted correctly) (see Fig.1, Col. 4, Lines 15-35).

As to claim 21, Ganthier teaches the method of claim 20 further comprising locating a rib in the second cavity to maintain the position of the node support relative to

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a floor of the lower enclosure (i.e. since the rib is the filling material of the socket it extends between the individual nodes to help maintain the position of the pin socket so the pin will be inputted correctly) (see Fig.1, Col. 4, Lines 15-35).

As to claim 22, Ganthier teaches the method of claim 21 wherein locating the rib includes extending the rib between the node support and a wall of the second cavity (i.e. since the rib is the filling material of the socket it extends between the individual node support down to the lower cavity wall) (see Fig.1, Col. 4, Lines 15-35).

As to claim 23, Ganthier teaches the method of claim 21 wherein locating the rib includes extending the rib between two node supports (i.e. the rib is the filling for the entire socket which naturally extends between any two node supports pin socket) (see Fig.1, Col. 4, Lines 15-35).

4. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu in view of Ma as applied in claim 1-3 above, and further in view Sheehan (http://reviews.cnet.com/keyboards/apple-wireless-keyboard/4505-3134_7-30568482.html?tag=prod.img.1).

As to claim 4, Wu teaches the enclosure of claim 1 wherein the second cavity has a substantial U-shape but does not explicitly teaches extends substantially 15.5 inches. Sheehan teaches wherein the keyboard is substantially 15.5 inches (i.e. Sheehan report the keyboard design which is 17.5 inches wide and 1.3 inch deep) (see Sheehan, Line 19).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have utilized the form factor of the Apple keyboard reported by Sheehan to the modular keyboard design in order to clarify the actual dimension of the keyboard which also outlines the side of the cavity which contains the membrane circuitry.

As to claim 5, Wu in view of Sheehan teaches the enclosure of claim 1 wherein the second cavity has a substantial U-shape, extends substantially 15.5 inches (i.e. the Apple keyboard is 17.5 inches long and since the cavity of the keyboard is slightly less than this length it is substantially 15.5 inches, and is substantially 0.5 inches deep (i.e. the Apple keyboard is 1.3 inches deep and since the cavity is within the overall depth of the keyboard it is substantially 0.5 inches deep) (see Sheehan line 19).

5. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wu in view of Ma as applied to claims 1 and 15 above, and further in view of Anderson (US Patent: 6,587,094).

As to claim 17, see discussion of claim 15 above, Wu and Ma teaches the keyboard of claim 15 having the lower enclosure, but does not explicitly teaches includes two legs operable to support a portion of the lower enclosure above a surface, and the region extends between the two legs. Anderson teaches a keyboard having two legs (i.e. the two bumps placed on the bottom of the keyboard to separate it from the surface below the keyboard which is visible in Figure 2) operable to support a portion of the lower enclosure above a surface, and the region extends between the two legs (i.e. since the two bumps are widely separated and placed on the corner of the keyboard) (see Anderson, Fig. 2).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have added the two legged keyboard support design of Anderson to the overall modular keyboard design of Wu and Ma in order to create a more flexible keyboard for computer application (see Anderson, Col. 2, Lines 34-40).

Response to Arguments

6. Applicant's arguments filed 2/13/2009 have been fully considered but they are not persuasive.

In pages 7-10 of the reply the applicant argues regarding claims 1-23, that the prior art Wu in view of Ma does not teach the claimed limitation of "a region forming a second cavity in a lower enclosure ... in the first cavity generates the signal". The examiner disagree with the said argument since the limitation of physical support read on the Wu structure since during the actualization of the key stroke the two node are indeed brought together, where the mechanical contact necessary for a successful key

stroke is allow by the two nodes matching each. Therefore, viewing the design of Wu's figure 1a, it is clear the structure does complement each other in providing mechanical support when viewed as a whole. Also the keyboard half of Ma clearly has a wire and a connection assembly that extend down toward the cavities whereby the cables can be fit into the computer body and connecting to the processor to allow for the input of the user to be implemented. Therefore the keyboard structure of Ma has both a mechanical and electrical connection between the keyboard sub-structures and the means body that enclosed the processor. The figure 1 of Ma clear show this where the two cables has a line that lead directly down to the smaller second cavities 112. One of ordinary skill in the art can clear appreciate that the smaller cavity designs to allow the cable assembly to pass through. The combination of the prior art Wu and Ma allows for a totally keyboard solution where the extending layout of Ma is used to enhance the multi-layer keyboard construction of Wu, since Ma is silent on the actual keyboard key structure and Wu teaches the precise key node system. In this way, the amended claim limitations of the independent claims 1, 15, 19 and 24 still read on the prior art Wu when in view of Ma. Subsequently the argument with respected the dependent claims 2-14, 16-18, 20-23 and 25-26 are not persuasive for the same reasons.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Calvin Ma whose telephone number is (571) 270-1713. The examiner can normally be reached on Monday - Friday 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Calvin Ma
April 26, 2009

/Chanh Nguyen/
Supervisory Patent Examiner, Art
Unit 2629